ESR24-038 - Pioneering a Transdisciplinary Urban Surveillance System for Human Papilloma Virus with Vulnerable Communities

Zusammenfassung

In 2023, Austria extended its national vaccination program for Human Papillomavirus (HPV), joining WHO's call to eliminate cervical cancer and expanding its goals with a gender-neutral policy. Yet, the lack of any HPV surveillance system poses severe challenges in assessing the impact of vaccination, the evolutionary consequences on circulating HPV genotypes, and the basic sociality of HPV within dense urban environments. This project proposes a novel transdisciplinary approach which integrates sequencing-based genomic epidemiology, mixed-method social science and public health research, and agent-based modeling to tackle these interconnected challenges. We will map viral population dynamics onto urban social dynamics, unveiling transmission networks and contributing to prevention of HPV-linked cancers. Partnering with the NGO and clinic Ambermed that supports patients without health insurance in Austria, volunteer HPV swabbing will be enhanced through social participatory methods, and complemented by a novel pipeline to detect population-wide circulating HPV genotypes from wastewater to test the risk of high-impact variants and indirect effects of vaccination. All novel and complementary evidence will be synthesized to yield a transmission model for the whole Viennese population, intervention scenarios, and a policy blueprint with recommendations and tailored measures. Our pioneering approach tackles existing socioeconomic inequalities and gender disparities with an additional focus on boys and men. This transdisciplinary strategy pushes the boundaries of OneHealth in practice, with the potential of serving as a prototype for effective prevention and multi-system surveillance of infectious diseases in the urban environment more generally.

Wissenschaftliche Disziplinen:
Virology (34%) | Empirical social research (33%) | Mathematical modelling (33%)

Keywords:
human papilloma virusgenomic epidemiologyempirical social sciencespopulation-wide modelingtransdisciplinary science

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Weiterführende Links zu den beteiligten Personen und zum Projekt finden Sie unter
https://wwtf.at/funding/programmes/esr/ESR24-038/